

Lexington, Missouri: 16th, ice-dam broke at 4 a. m., causing no damage.

Hannibal, Missouri: 16th, the river is clear of ice for miles south of the Hannibal bridge, but above that point it is still intact.

Boonville, Missouri: 16th, the ice is very thick and badly dammed at this place.

Jefferson City, Missouri: 16th, ice has broken up and is passing in huge floes.

Willamette river.—Umatilla, Oregon: 1st and 2d, floating ice. 12th, river frozen above and below town; ice being from two to three feet thick. 24th, ice-dam in river at 3 p. m.

Portland, Oregon: 5th and 7th, much floating ice in river.

Kansas river.—Fort Riley, Kansas: 15th, ice broke up in river at 4 a. m., and continued running during the remainder of the month.

Miscellaneous.—West Las Animas, Colorado: 3d, the Arkansas and Purgatoire rivers, rapidly running streams near this place, are frozen to the bottom in many places.

Grampian Hills, Pennsylvania: 15th river free of ice.

TEMPERATURE OF WATER.

The temperature of water as observed in rivers and harbors, at the Signal-Service stations, with the average depth at which the observations were made, are given in the following table. In this table are also shown the highest and lowest observed water temperatures of the month, with the monthly ranges, and the monthly mean temperature of the air for the various stations. At the following stations no observations were made during the month on account of ice: Alpena, Escanaba, Mackinaw City, Marquette and Detroit, Michigan; Buffalo, New York; Chicago, Illinois; Cleveland, Sandusky, and Toledo, Ohio; Duluth, Minnesota; Milwaukee, Wisconsin. Observations were also not made on account of ice at New London, Connecticut, from the 1st to 3d, and at Grand Haven, Michigan, from 1st to 26th.

Temperature of Water for February, 1883.

STATION.	Temperature at bottom.		Range.	Average depth, feet and inches.		Mean temperature of the air at station.
	Max.	Min.				
Atlantic City, New Jersey	39.0	34.9	4.1	6 5	35.1	
Alpena, Michigan*						
Augusta, Georgia	61.0	50.0	11.0	9 4	56.7	
Baltimore, Maryland	37.0	33.0	4.0	9 11	39.1	
Block Island, Rhode Island	35.6	31.8	3.8	8 6	32.1	
Boston, Massachusetts	32.7	29.8	2.9	25 0	29.2	
Buffalo, New York*						
Cedar Keys, Florida	78.0	60.0	18.0	8 5	66.9	
Charleston, South Carolina	59.0	49.6	9.4	38 0	57.2	
Chicago, Illinois*						
Chincoteague, Virginia	47.0	38.0	9.0	5 8	40.2	
Cleveland, Ohio*						
Detroit, Michigan*						
Delaware Breakwater, Delaware	39.4	33.8	5.6	4 2	37.9	
Duluth, Minnesota*						
Eastport, Maine	33.8	31.3	2.5	16 8	19.9	
Escanaba, Michigan*						
Galveston, Texas	54.0	43.0	11.0	14 10	55.3	
Grand Haven, Michigan†	29.0	29.0	0.0	19 0	23.6	
Indianola, Texas	66.9	39.7	27.2	8 7	54.0	
Jacksonville, Florida	71.0	60.0	11.0	18 0	64.3	
Key West, Florida	78.0	73.3	4.7	16 8	75.0	
Mackinaw City, Michigan*						
Marquette, Michigan*						
Milwaukee, Wisconsin*						
Mobile, Alabama	63.5	52.5	11.0	15 11	59.6	
New Haven, Connecticut	32.8	30.1	2.7	14 4	27.6	
New London, Connecticut†	35.0	33.0		11 10	30.4	
Newport, Rhode Island	34.9	31.4	3.5	9 10	30.5	
New York City	34.2	30.2	4.0	10 6	31.4	
Norfolk, Virginia	52.0	43.0	9.0	16 9	45.8	
Pensacola, Florida	67.7	56.7	11.0	17 7	60.9	
Portland, Maine	31.5	30.0	1.5	18 11	25.7	
Portland, Oregon	41.6	29.9	11.7	50 9	33.1	
Port Eads, Louisiana	45.8	42.3	3.5	9 7	61.8	
Provincetown, Massachusetts	34.5	31.0	3.5	14 0	29.7	
Punta Rassa, Florida	78.0	65.6	12.4	11 2	70.7	
Sandusky, Ohio*						
Sandy Hook, New Jersey	36.0	31.4	4.6	1 5	32.6	
San Francisco, California	50.6	46.1	4.5	29 2	47.9	
Savannah, Georgia	61.8	49.6	12.2	12 5	60.1	
Smithville, North Carolina	51.0	46.0	5.0	10 0	52.1	
Toledo, Ohio*						
Wilmington, North Carolina	59.0	46.0	13.0	13 0	54.7	

* Frozen. † Observations incomplete. See text.

The largest monthly ranges of water-temperature are: In-

dianola, Texas, 27°; Cedar Keys, Florida, 18°; Wilmington, North Carolina, 13°; Punta Rassa, Florida, 12° 4'; Savannah, Georgia, 12° 2'. The smallest are: Portland, Maine, 1° 5'; Eastport, Maine, 2° 5'; New Haven, Connecticut, 2° 7'; Boston, Massachusetts, 2° 9'; Newport, Rhode Island, 3° 5'; Port Eads, Louisiana, 3° 5'; Provincetown, Massachusetts, 3° 5'; Block Island, Rhode Island, 3° 8'.

ATMOSPHERIC ELECTRICITY.

AUROSAS.

The most extensively observed display of the month occurred on the 24th. It was observed on the New England coast, and from the upper Mississippi valley westward as far as Oregon and Washington Territory.

The aurora of the 27th was observed in New England, the Lake region, and thence westward to Montana.

Extended displays occurred in the northwest on the 25th, 28th; and in northern New England on the 1st, 4th, 5th, 13th, and 28th.

The most southerly points at which auroras were observed during the month are Cape Hatteras, North Carolina, on the 14th, and Visalia, California, on the 3d and 4th.

The observer at Saint Vincent, Minnesota, reports auroras on the 1st, 2d, 6th, 20th, 24th, and 28th.

Numerous other displays, not here noted, were reported in the northern districts.

ATMOSPHERIC ELECTRICITY INTERFERING WITH TELEGRAPHIC COMMUNICATION, ETC.

Fort Davis, Texas, 11th.

Captain Vogelgesang, of the s. s. "Silesia," reports that, during the gales encountered between N. 50° 53', W. 23° 00', and N. 49° 41', W. 32° 22', from the 7th to 9th, the atmosphere was filled with electricity. The tops of masts, yards, and all iron stays were tipped with electric light, and a sudden aberration of the compass of 22½ points to the northward was twice observed, which disappeared with the extinction of the electric light on the yards and stays. There was also felt one heavy stroke of lightning, which went down the funnel, causing a blast of fire to come out of the funnel, and lighting the stoke-hole, steerage, and cabins with an electric light. It sounded like a heavy gunshot, but no thunder was heard. The electricity was most felt before the setting in of the squall.

THUNDER-STORMS.

Thunder-storms were reported in the various states and territories, as follows:—

Alabama.—Mobile, 23d, 24th; Auburn, 24th; Green Springs, 24th.

Arizona.—Fort Apache, 20th; Fort Grant, 20th; Prescott, 20th; Camp Thomas, 20th.

Arkansas.—Little Rock, 2d, 3d, 14th; Fort Smith, 3d, 4th.

California.—San Francisco, 13th; Sacramento, 14th.

Florida.—Pensacola, 9th, 24th; Jacksonville, 12th, 16, 18th.

Illinois.—Thunder-storms were reported from numerous stations throughout the state, as follows: 2d, 3d, 6th, 14th, 15th, 16th.

Indiana.—Logansport, 2d; Lafayette, 3d; Wabash, 3d; Laconia, 15th.

Indian Territory.—Fort Sill, 12th, 14th.

Iowa.—Thunder-storms were reported from numerous stations throughout the state on the 15th and 16th; at Fort Madison on the 2d, 3d, 23d; Burlington, 2d; Des Moines, 3d.

Kansas.—Reported by various stations throughout the state on the 3d, 13th, 15th, 16th, and at Creswell on the 21st.

Kentucky.—Bowling Green, 10th.

Louisiana.—Shreveport, 11th, 12th, 14th; Port Eads, 1st, 17th, 24th; New Orleans, 23d; Point Pleasant, 24th.

Massachusetts.—Worcester, 4th; Westborough, 4th.

Michigan.—Were generally reported throughout the state on the 15th and 16th; at Hillsdale, on the 14th; and at Otisville, on the 17th.

Mississippi.—Starkville, 12th, 16th; Vicksburg, 11th, 12th, 16th, 23d, 24th.

Missouri.—Were of general occurrence throughout the state on the 2d, 3d, 6th, 16th, 22d.

Nebraska.—Nebraska City, 16th.

New Hampshire.—New Market, 4th.

New Mexico.—Silver City, 20th; Santa Fé, 21st, 22d.

North Carolina.—Hatteras, 4th; Weldon, 4th; Kittyhawk, 7th, 17th; Highlands, 12th, 17th, 22d; Chapel Hill, 17th; Charlotte, 18th.

Ohio.—North Lewisburg, 2d; Westerville, 2d; Cleveland, 14th, 15th; Margaretta, 14th.

Pennsylvania.—Erie, 14th; Meadville, 14th.

Tennessee.—Chattanooga, 11th, 15th; Memphis, 16th; Nashville, 14th, 15th, 16th.

Texas.—Fort Concho, 13th, 16th, 23d; Fort Davis, 11th, 23d; Palestine, 14th, 16th, 23d; Brownsville, 16th; Indianola, 17th, El Paso, 20th; Mason, 20th; Galveston, 16th, 23d; Coleman City, Fredericksburg, Eagle Pass, Henrietta, Fort McKavett, and Uvalde, on the 23d.

Virginia.—Fort Monroe, 8th.

Wisconsin.—Were reported by various stations throughout the state on the 15th and 16th.

OPTICAL PHENOMENA.

SOLAR HALOS.

Solar halos have been observed in the various districts, as follows:—

New England.—1st, 2d, 5th, 6th, 9th, 10th, 14th, 15th, 20th, 22d.

Middle Atlantic states.—6th, 9th, 10th, 12th, 13th, 20th, 22d, 24th.

South Atlantic states.—4th, 15th, 22d, 25th, 26th.

Florida.—23d, 27th.

Western Gulf.—18th, 20th, 25th, 26th.

Ohio valley and Tennessee.—1st, 2d, 4th, 8th, 9th, 10th, 12th, 13th, 15th to 18th, 20th, 23d.

Lower lakes.—1st, 10th, 23d, 24th, 27th.

Upper lakes.—1st, 4th, 7th, 9th, 10th, 12th, 13th, 17th, 20th, 21st, 24th, 27th.

Upper Mississippi valley.—1st to 4th, 7th to 10th, 12th, 13th, 15th, 17th to 21st, 24th, 25th.

Missouri valley.—3d, 4th, 8th, 9th, 11th, 13th to 16th, 19th, 20th, 27th.

Northern slope.—2d, 5th, 7th, 10th, 13th, 17th, 24th.

Northern plateau.—1st, 5th, 6th, 7th, 9th, 19th, 21st, 27th, 28th.

Middle Pacific.—3d, 8th, 13th, 16th, 18th, 19th, 20th, 24th, 26th.

South Pacific.—8th, 9th, 11th, 26th, 27th.

Solar halos were also reported by the following stations not included in the districts named above:—

Albany, Oregon, 5th; Fort Buford, Dakota, 4th; Prescott, Arizona, 8th, 24th; Salt Lake City, Utah, 18th.

LUNAR HALOS.

Lunar halos have been observed in the various districts, on the following dates:—

New England.—1st, 13th, 14th, 19th, 20th, 21st, 24th.

Middle Atlantic states.—11th to 16th, 19th, 20th, 21st, 23d.

South Atlantic states.—11th, 13th, 14th, 17th, 21st, 22d, 23d, 25th, 27th.

Eastern Gulf.—11th, 21st, 22d, 25th.

Western Gulf.—3d, 16th, 17th, 19th to 22d, 25th.

Rio Grande valley.—13th.

Ohio valley and Tennessee.—11th to 16th, 18th to 24th.

Lower lakes.—10th, 12th, 13th, 17th to 21st.

Upper lakes.—12th, 13th, 15th to 23d.

Extreme northwest.—15th, 19th, 20th, 22d.

Upper Mississippi valley.—4th, 12th to 23d.

Lower Missouri valley.—11th, 13th to 16th, 18th, 19th, 20th.

Northern slope.—13th, 16th, 21st.

Middle slope.—12th, 15th.

Southern slope.—13th, 15th, 18th, 19th.

Southern plateau.—11th, 13th, 14th, 20th, 21st, 23d, 24th, 25th, 28th.

Northern plateau.—15th, 19th, 20th, 26th.

California.—6th, 11th, 13th, 17th, 18th, 19th, 21st, 23d, 25th, 26th.

Lunar halos were also reported from the following stations, not included in the districts named above:—

Pensacola, Florida, 11th, 21st.

Salt Lake City, Utah, 17th, 18th, 21st.

Portland, Oregon, 20th.

Albany, Oregon, 27th.

Grand Haven, Michigan, 13th, an unusually large lunar halo was observed, the diameter being 84°.

MIRAGE.

Wicklow, Dakota, 11th.—The village of Madison, eleven miles distant, was plainly visible. On the 28th, mirage was observed from 7 to 9.30 a. m., between south-southwest and west-southwest, and was very remarkable for its extent and distinctiveness. Buildings were seen with their surroundings apparently at elevations of from 100 to 1,000 feet. In some instances they appeared inverted, and again in their natural positions above the inverted images. They were constantly changing in altitude in places, while in others they remained stationary.

Fort Maginnis, Montana, 14th.—At 8.30 this morning various points on the Yellowstone were visible, although some of them were one hundred and fifty miles distant. The buildings and flags of a military post were plainly seen at this place, and were recognized to be Fort Custer, nearly two hundred miles away.

Huron, Dakota, 26th.—Mirage observed from 8 to 9 a. m. Houses ten miles distant, not ordinarily visible, on account of swells in the prairie, were clearly seen, having the appearance of two structures, one resting upon the other in an inverted position. The Wessington Hills and Ree Heights, at distances of twenty-five and fifty miles, respectively, appeared as lofty glaciers. Fields in which corn-stalks were left standing appeared as forests of lofty, leafless trees. Ice on the river, in a bend five miles away, ordinarily hidden from view by high bluffs, could be seen as a sheet of opaque glass, showing distinctly the bends in the stream, and glistened in the sunlight. On the 28th, from 8 to 9.30 a. m., Triquois, eighteen miles east, was plainly visible, although ordinarily hidden from view by swells in the prairie.

Similar conditions were also observed at the following stations:—

Salina, Kansas, 8th.

Pretty Prairie, Kansas, 8th.

Genoa, Nebraska, 3d, 5th.

Alexandria, Dakota, 5th, 25th, 28th.

Wicklow, Dakota, 7th, 25th, 27th.

Barnegat City, New Jersey, 4th.

Indianola, Texas, 6th, 17th, 18th, 19th.

MISCELLANEOUS PHENOMENA.

SUNSETS.

The characteristics of the sky, as indicative of fair or foul weather for the succeeding twenty-four hours, have been observed at all Signal-Service stations. Reports from one hundred and seventy-two stations show 4,779 observations to have been made, of which fifteen were reported doubtful; of the remainder, 4,764, there were 4,091, or 85.9 per cent., followed by the expected weather.

SUN SPOTS.

North Lewisburg, Ohio.—Mr. H. D. Gowey reports: Sun spots observed on all clear days during the month. They were the most numerous on the 8th, least numerous on the 25th, largest on the 15th, and smallest at close of the month. Magnetic variations on the 1st and 22d.

Port Eads, Louisiana, 15th.—A spot was observed on the sun's disc, slightly to the right of the centre, on this date.